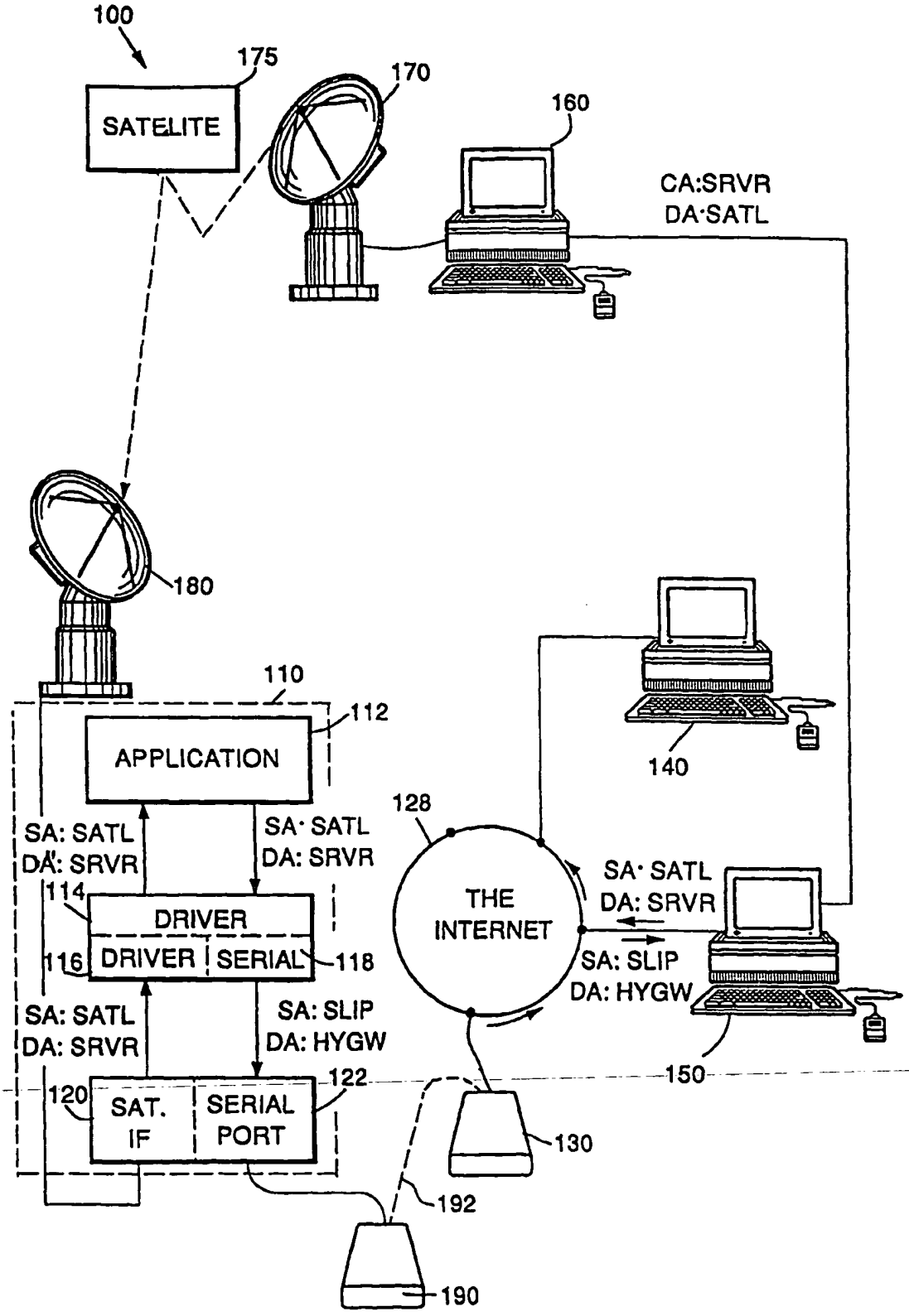

100
175
SATELITE
170
160
CA:SRVR
DA·SATL
180
110
112
APPLICATION
SA: SATL
DA: SRVR
SA· SATL
DA: SRVR
114
DRIVER
116
DRIVER
SERIAL
118
SA: SATL
DA: SRVR
SA: SLIP
DA: HYGW
120
SAT.
IF
SERIAL
PORT
122
128
THE
INTERNET
SA· SATL
DA: SRVR
SA: SLIP
DA: HYGW
140
150
130
192
190

FIG. 1.

FIG. 2.

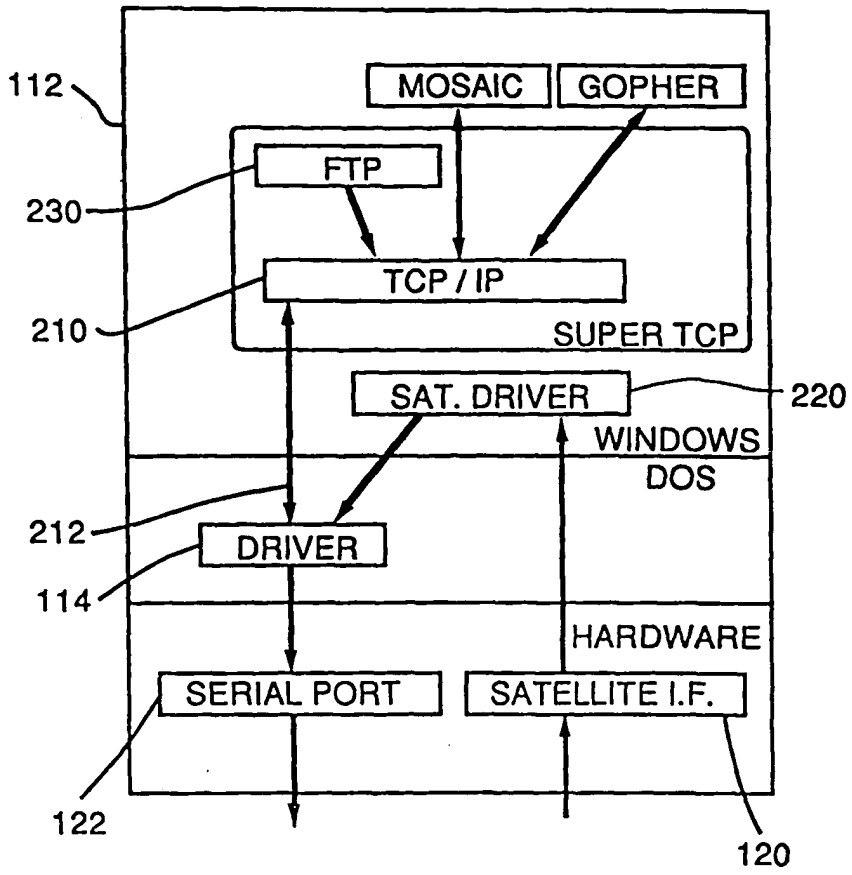

112
MOSAIC
GOPHER
FTP
230
TCP / IP
210
SUPER TCP
SAT. DRIVER
220
WINDOWS
DOS
212
DRIVER
114
HARDWARE
SERIAL PORT
SATELLITE I.F.
122
120

FIG. 3.

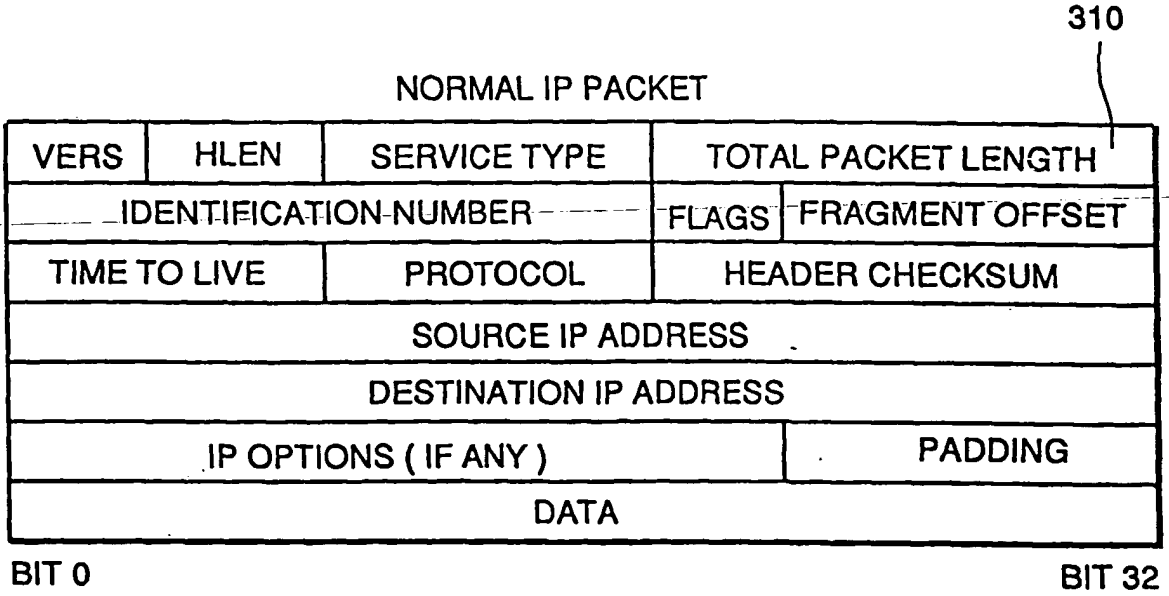

310
NORMAL IP PACKET
VERS
HLEN
SERVICE TYPE
TOTAL PACKET LENGTH
IDENTIFICATION NUMBER
FLAGS
FRAGMENT OFFSET
TIME TO LIVE
PROTOCOL
HEADER CHECKSUM
SOURCE IP ADDRESS
DESTINATION IP ADDRESS
IP OPTIONS (IF ANY)
PADDING
DATA
BIT 0
BIT 32

FIG. 4

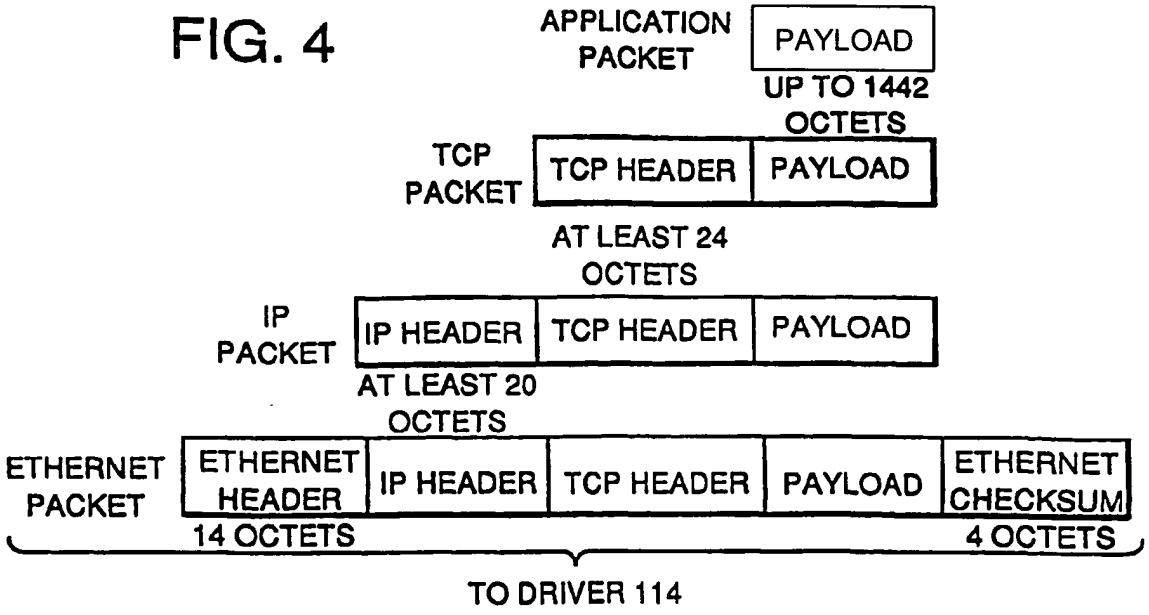
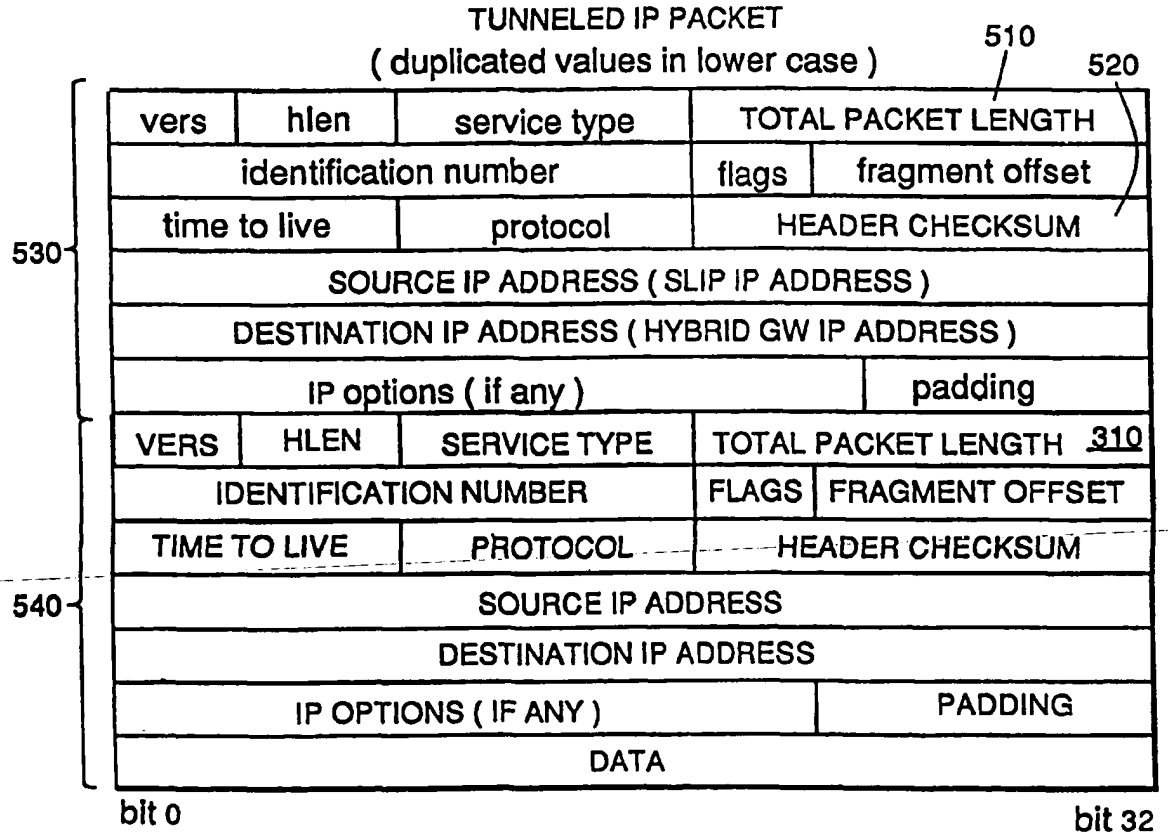

APPLICATION PACKET
PAYLOAD
UP TO 1442 OCTETS
TCP PACKET
TCP HEADER
PAYLOAD
AT LEAST 24 OCTETS
IP PACKET
IP HEADER
TCP HEADER
PAYLOAD
AT LEAST 20 OCTETS
ETHERNET PACKET
ETHERNET HEADER
IP HEADER
TCP HEADER
PAYLOAD
ETHERNET CHECKSUM
14 OCTETS
4 OCTETS
TO DRIVER 114

FIG. 5.


TUNNELED IP PACKET
(duplicated values in lower case)
510
520
vers
hlen
service type
TOTAL PACKET LENGTH
identification number
flags
fragment offset
time to live
protocol
HEADER CHECKSUM
530
SOURCE IP ADDRESS (SLIP IP ADDRESS)
DESTINATION IP ADDRESS (HYBRID GW IP ADDRESS)
IP options (if any)
padding
VERS
HLEN
SERVICE TYPE
TOTAL PACKET LENGTH
310
IDENTIFICATION NUMBER
FLAGS
FRAGMENT OFFSET
TIME TO LIVE
PROTOCOL
HEADER CHECKSUM
540
SOURCE IP ADDRESS
DESTINATION IP ADDRESS
IP OPTIONS (IF ANY)
PADDING
DATA
bit 0
bit 32

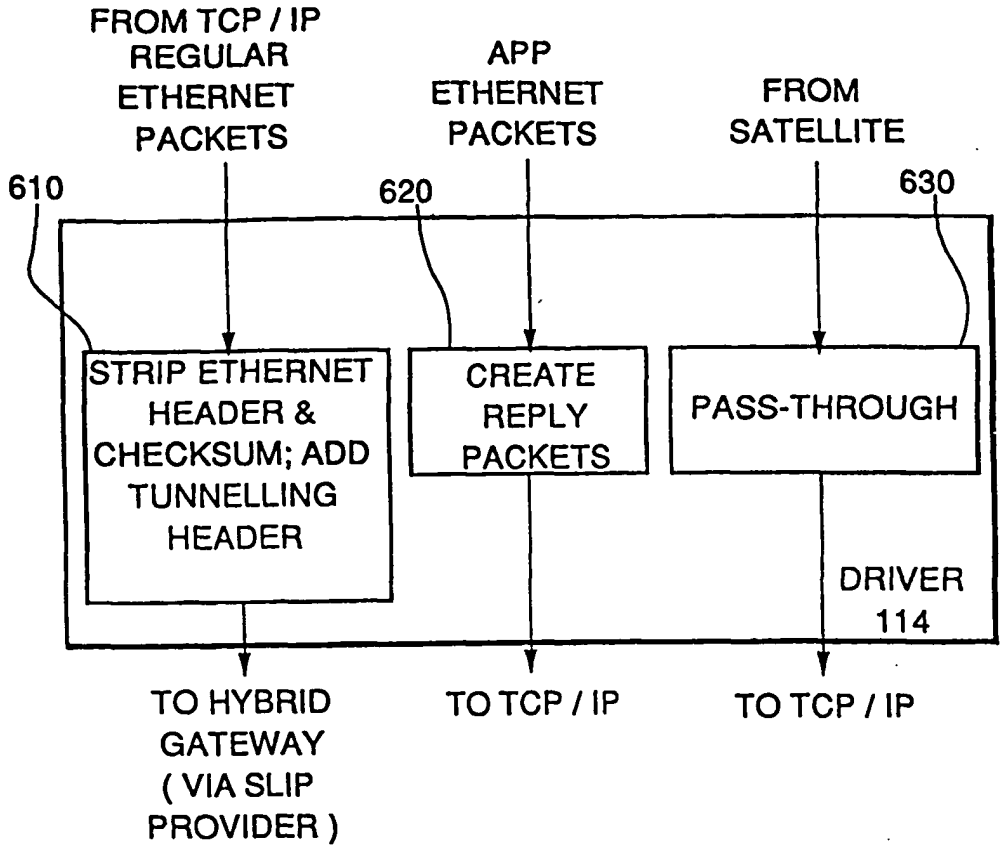

FROM TCP / IP REGULAR ETHERNET PACKETS
APP ETHERNET PACKETS
FROM SATELLITE
610
620
630
STRIP ETHERNET HEADER & CHECKSUM; ADD TUNNELLING HEADER
CREATE REPLY PACKETS
PASS-THROUGH
DRIVER 114
TO HYBRID GATEWAY (VIA SLIP PROVIDER)
TO TCP / IP
TO TCP / IP

FIG. 6.

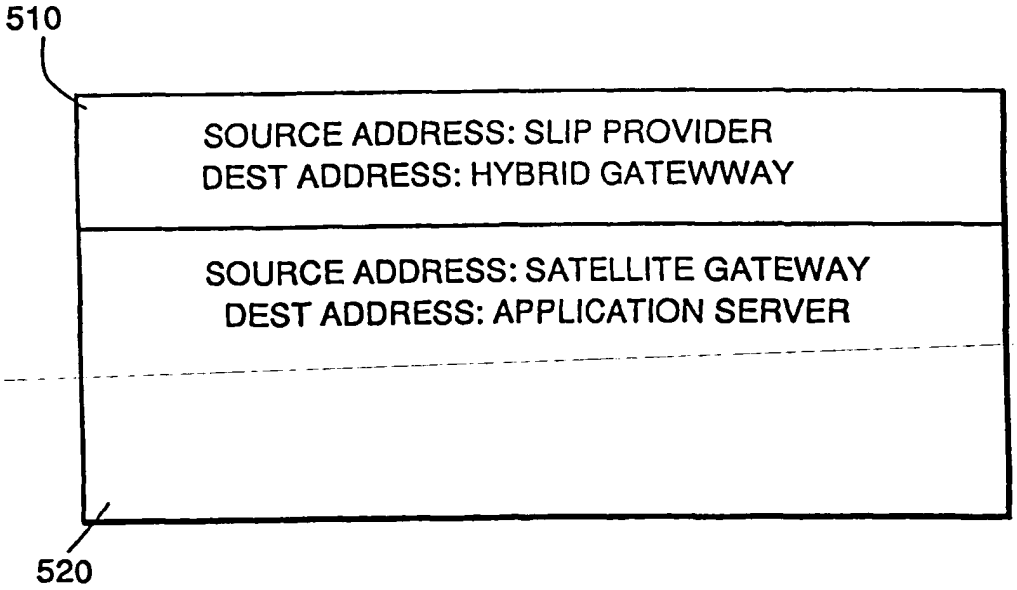

510
SOURCE ADDRESS: SLIP PROVIDER
DEST ADDRESS: HYBRID GATEWWAY
SOURCE ADDRESS: SATELLITE GATEWAY
DEST ADDRESS: APPLICATION SERVER
520

FIG. 7.

FIG. 8.

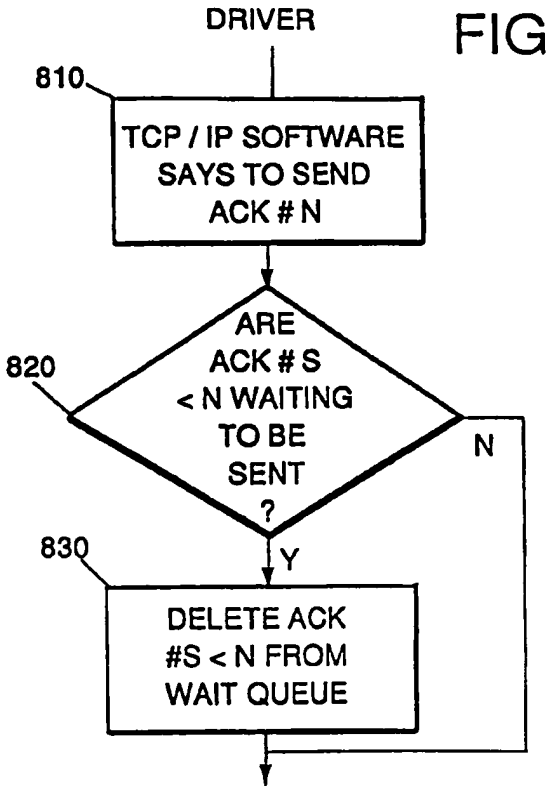

DRIVER
810
TCP / IP SOFTWARE SAYS TO SEND ACK # N
820
ARE ACK # S < N WAITING TO BE SENT ?
N
Y
830
DELETE ACK #S < N FROM WAIT QUEUE

FIG. 9.

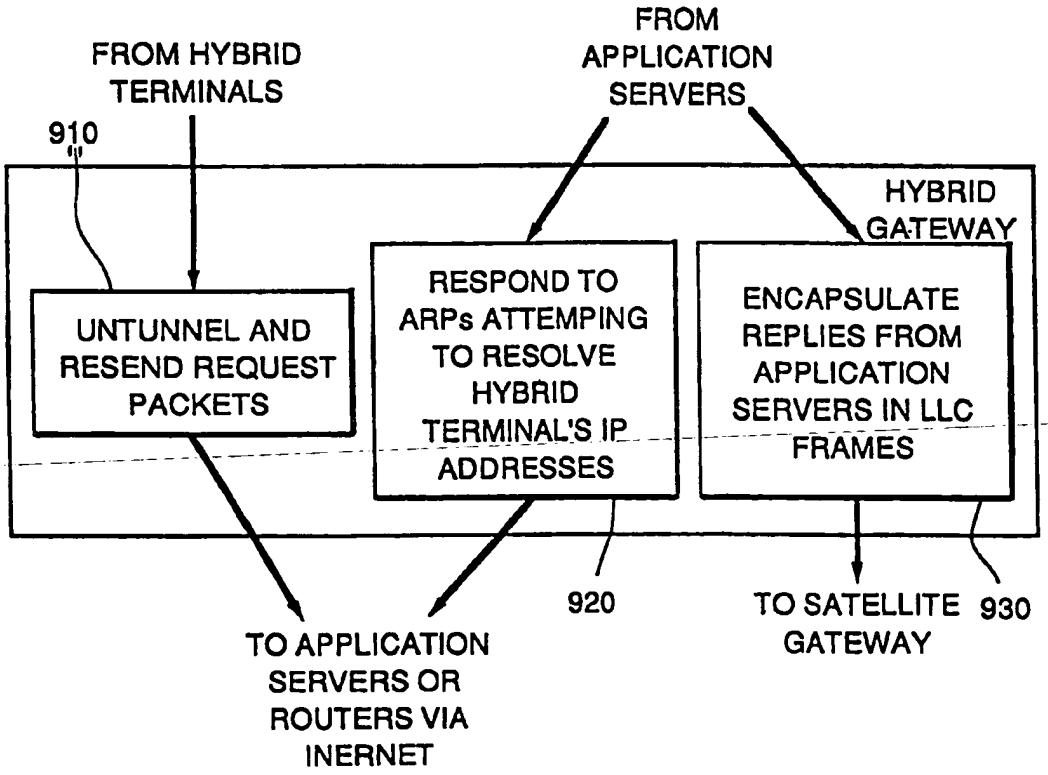

FROM HYBRID TERMINALS
FROM APPLICATION SERVERS
910
HYBRID GATEWAY
UNTUNNEL AND RESEND REQUEST PACKETS
RESPOND TO ARPs ATTEMPING TO RESOLVE HYBRID TERMINAL'S IP ADDRESSES
ENCAPSULATE REPLIES FROM APPLICATION SERVERS IN LLC FRAMES
920
930
TO APPLICATION SERVERS OR ROUTERS VIA INERNET
TO SATELLITE GATEWAY

FIG. 10.

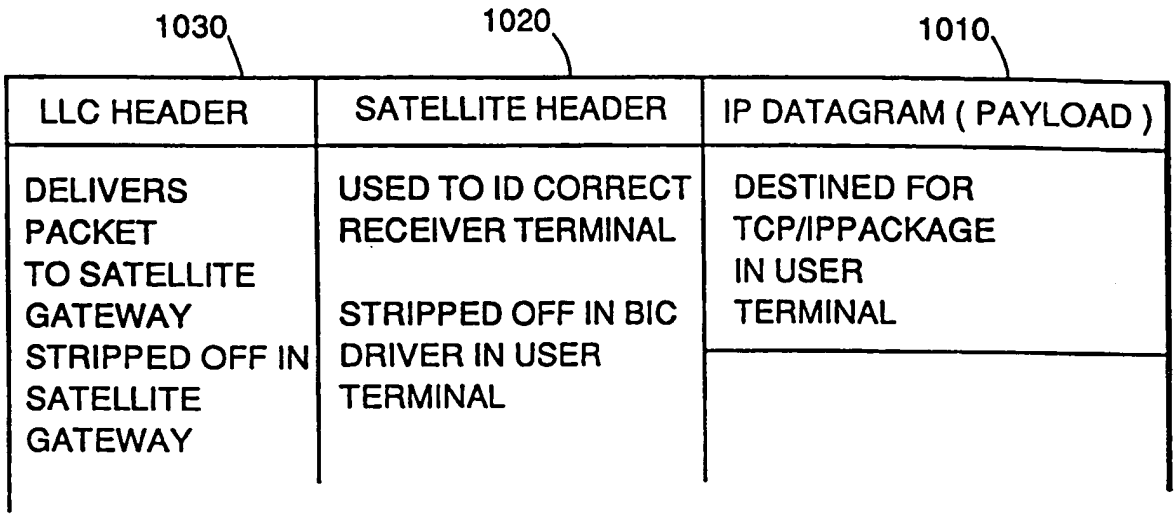
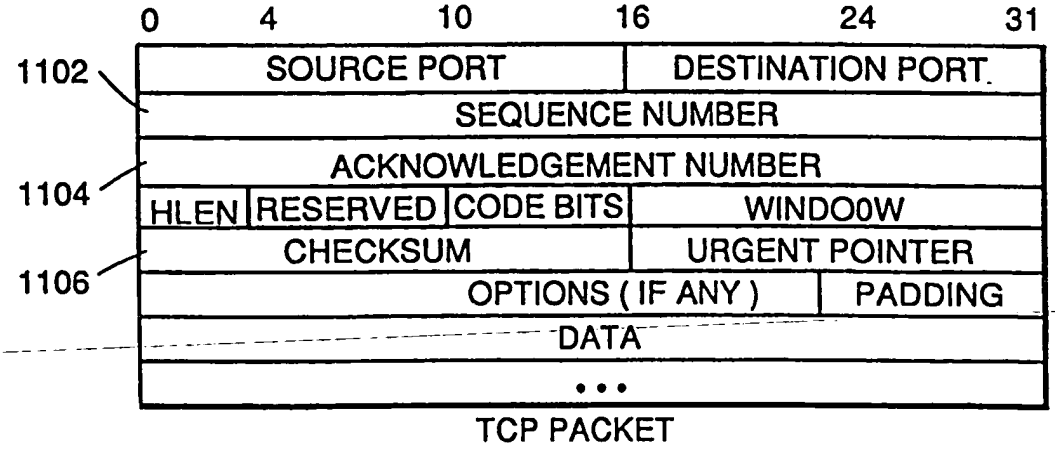


FIG. 11.



TCP PACKET

FIG. 12.

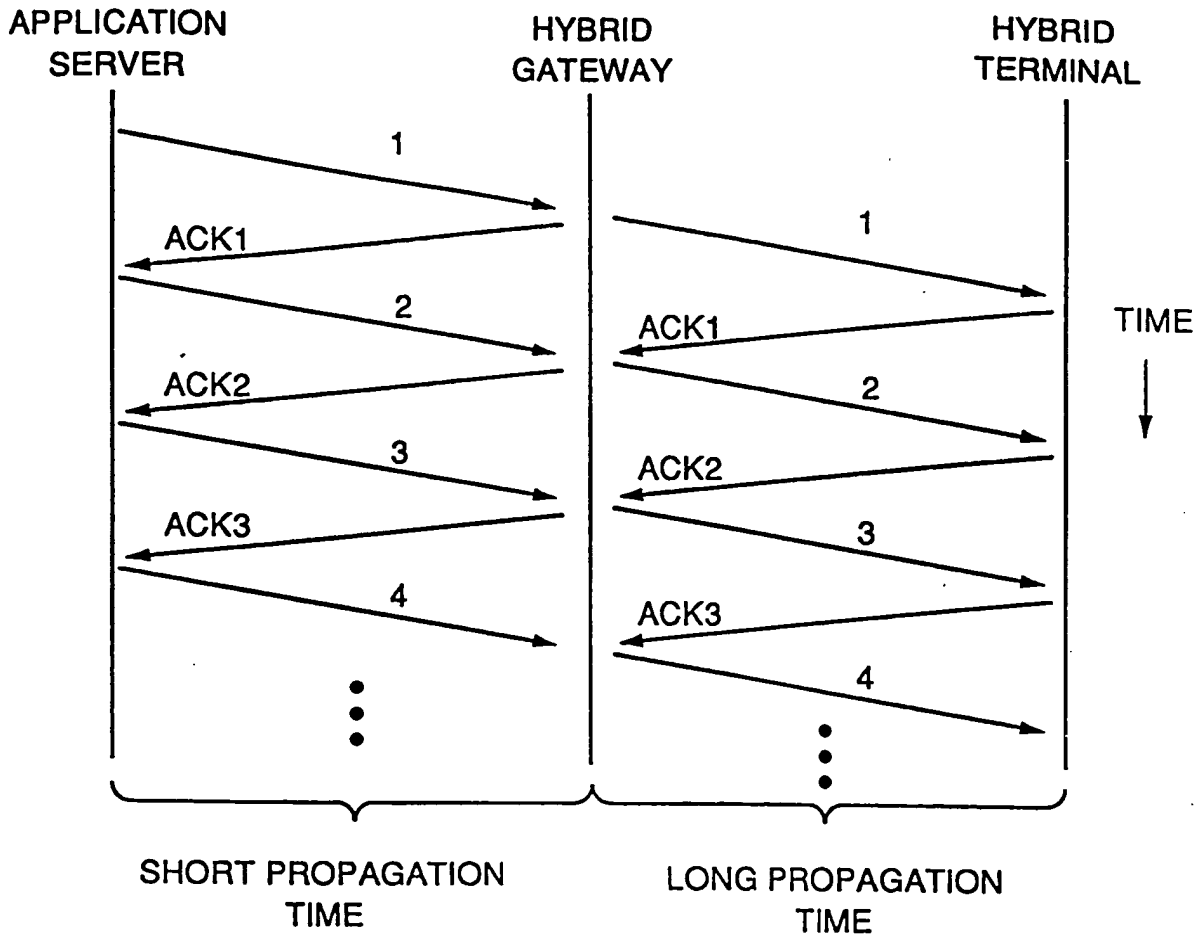


FIG. 13a.

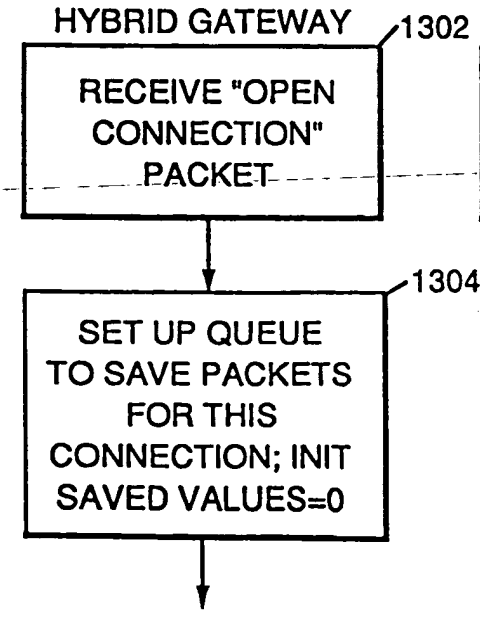


FIG. 13b.

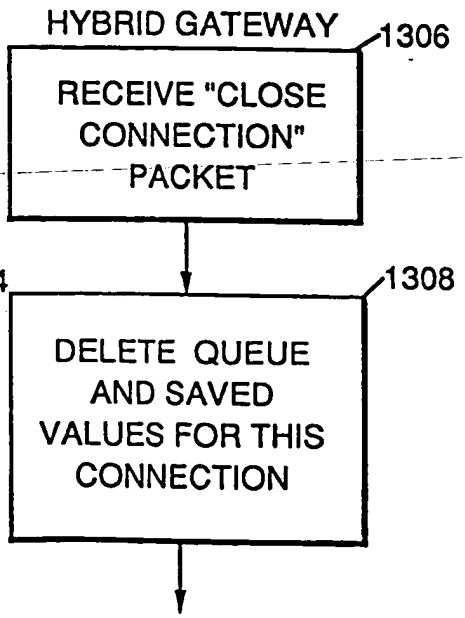


FIG. 13c.

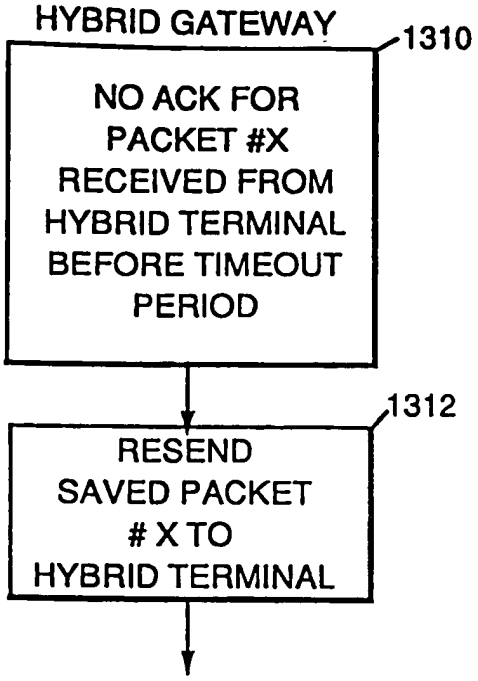


FIG. 13d.

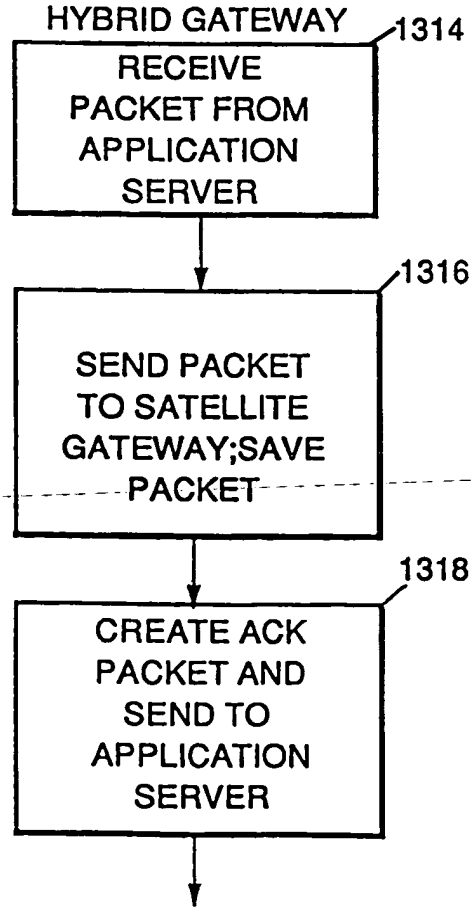
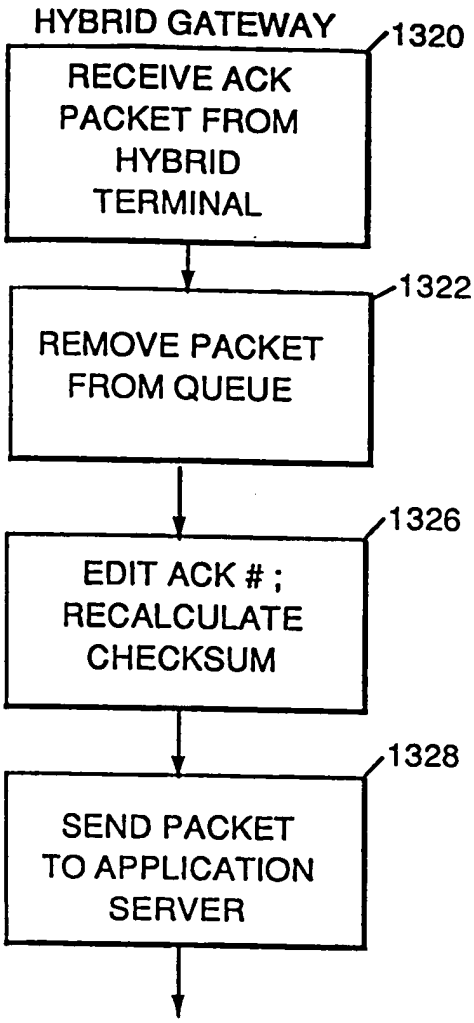


FIG. 13e.



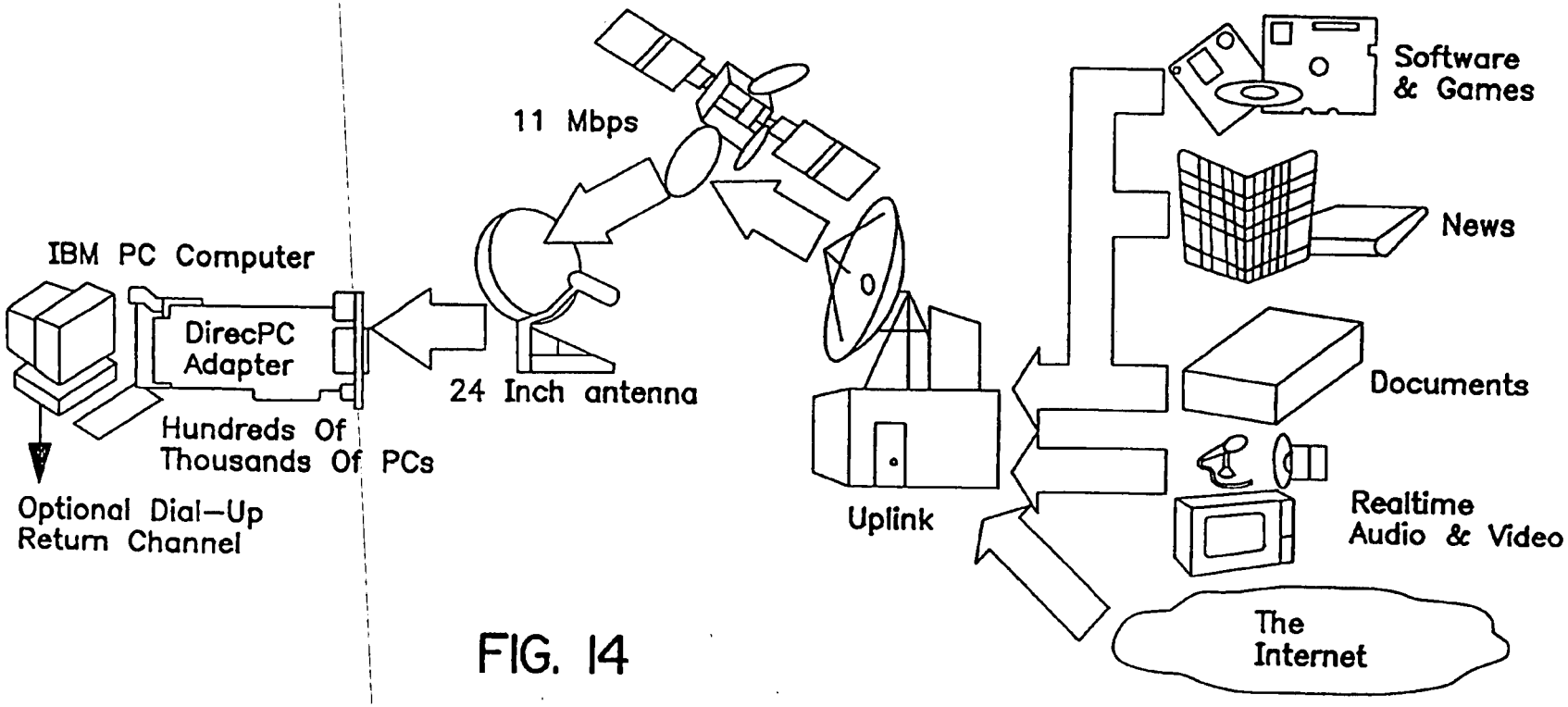

11 Mbps
IBM PC Computer
DirecPC
Adapter
24 Inch antenna
Hundreds Of
Thousands Of PCs
Optional Dial-Up
Return Channel
Uplink
Software
& Games
News
Documents
Realtime
Audio & Video
The
Internet

FIG. 14

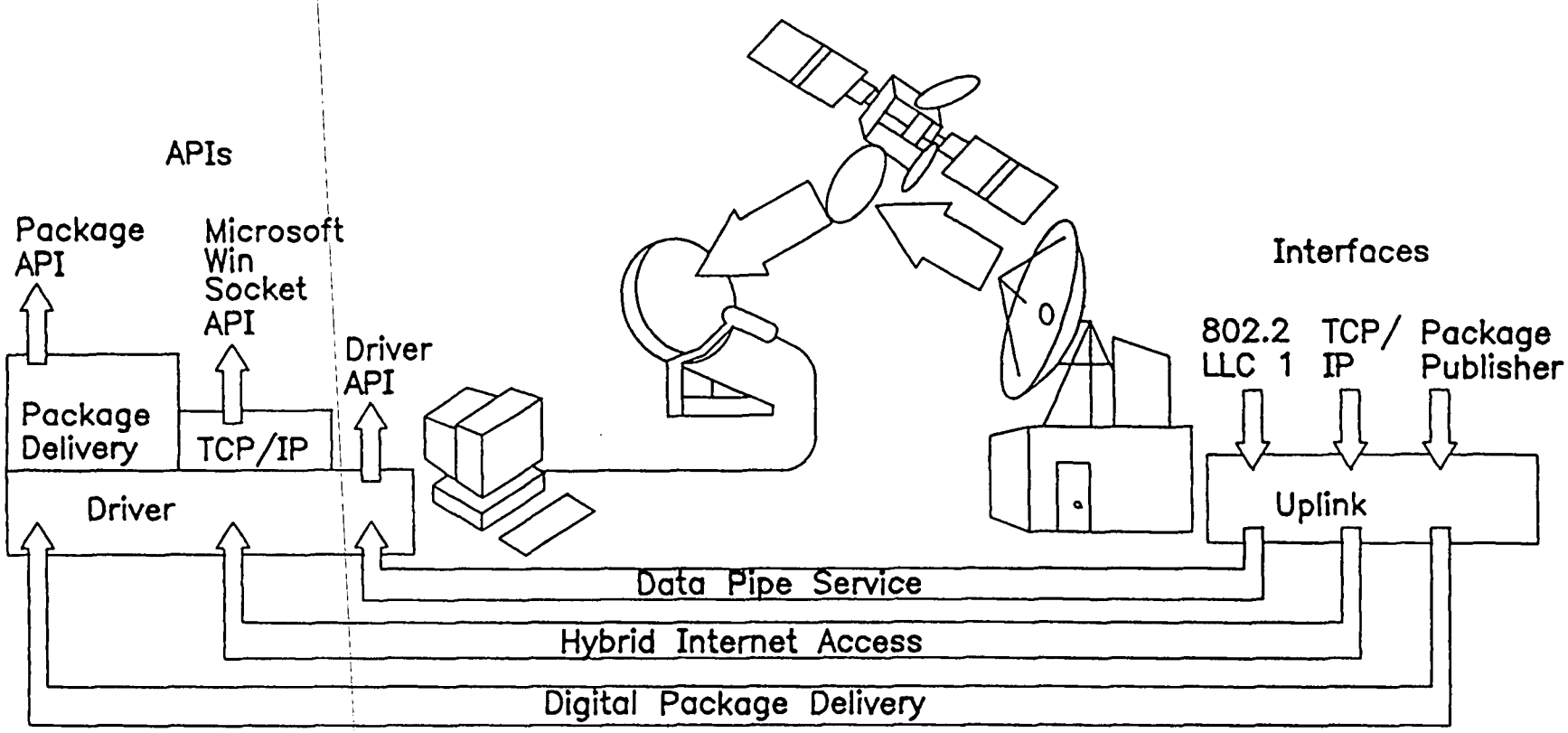

APIs
Package API
Microsoft Win Socket API
Driver API
Package Delivery
TCP/IP
Driver
Interfaces
802.2 LLC 1
TCP/ IP
Package Publisher
Uplink
Data Pipe Service
Hybrid Internet Access
Digital Package Delivery

FIG. 15